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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,138	12/30/2003	Hcung-Yong Ha	9717.24US01	1780
23552	7590	09/04/2007		
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			EXAMINER CHEN, BRET P	
			ART UNIT 1762	PAPER NUMBER
			MAIL DATE 09/04/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/751,138	<b>Applicant(s)</b> HA ET AL.	
	<b>Examiner</b> B. Chen	<b>Art Unit</b> 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 7,15,16,18 and 20-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-14,17 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Claims 1-23 are pending in this application. Amended claims 1-14 and newly added claims 19-23 are noted. Claims 15-16, 18 are withdrawn from consideration as being directed to a nonelected invention as a result of the previous restriction requirement.

#### *Election/Restrictions*

Applicant's election without traverse of claims 1-6, 8-14, 17, 19 in the reply filed on 6/4/07 is acknowledged.

Claims 7, 20-23 are withdrawn from consideration as being directed to a nonelected species.

#### *Specification*

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and **generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words**. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

It is noted that the abstract contains 3 paragraphs. The examiner suggests amending the abstract to a single paragraph.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 1-6, 8-14, 17, 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

In claim 2 lines 1-2, the term “the inorganic materials” lacks antecedent basis and/or is confusing as to what it is referring to.

In claim 2 line 2, the term “said inorganic thin film” lacks antecedent basis and/or is confusing as to which thin films is being referred to.

Claims 2, 4-6 contain improper Markush terminology. The phrase should read “selected from the group consisting of”. The examiner has interpreted the claims to read “comprising”.

In claim 3, the term “BAM” is deemed vague and indefinite as to what said term means/is.

The use of the trademarks in claim 3 has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Applicant is requested to indicate that “Dow membrane, Flemion membrane, Aciplex membrane, BAM, or Gore-select membrane” are trademarks.

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In claim 6 lines 1-2, the term “said organic metal compounds” lack antecedent basis and is confusing as to what it is referring to as there is no mention of anything organic in the preceding claims.

In claim 8 line 2, the phrase “is characterized to have” is deemed vague and indefinite as to whether it has it or not. A positive recitation is requested by deleting said phrase and inserting --has--.

In claims 10-11, the term “the argon pre-treatment” lacks antecedent basis and/or is confusing as to what it is referring to.

In claim 13 line 2, the term “the thickness of said inorganic films” is deemed vague and confusing as to whether it is referring to the individual films or the total of the individual films.

In claim 14 line 2, the term “the surface of electrolyte membrane” lacks antecedent basis and/or is confusing as to which surface is being referred to.

In claim 14 line 4, the term “the electrodes” lacks antecedent basis and/or is confusing as to what it is referring to.

***Allowable Subject Matter***

Claims 1-6, 8-14, 17, 19 are allowed. None of the prior art references teach a method of manufacturing composite polymer electrolyte membranes coated with inorganic thin films for fuel cells.

**Akita et al. (6,523,699)** discloses a method of forming a composite polymer membrane which contains a sulfonic acid group-containing polyvinyl alcohol having crosslinked structures, which is obtained by heat treating a mixed solution of polyvinyl alcohol, a sulfonating agent and a crosslinking agent (col.1 lines10-14 and co2 lines 34-48).

**Ichino et al. (5,858,264)** discloses a method of making a composite polymer electrolyte membrane which includes an ion-conductive polymer gel contained and supported by a matrix material for use in a lithium secondary cell by impregnating the porous polytetrafluoroethylene membrane with the polymer containing ion-conductive component and allowing the impregnated material to physically crosslink to form the composite polymer electrolyte membrane.

**EP-A-0 708 791** describes a composite polymer electrolyte membrane form which has an ion-conducting polymer gel applied to a matrix material made from a porous polytetrafluoroethylene membrane.

**Nouel and Fedkiw** teach the conventional use of Nafion-based composite polymer electrolyte membrane (**Electrochem. Acta** 45:2381-2387, 1997).

**Fan et al. (6,893,763)** teaches relates to a composite polymer electrolyte membrane comprising silica and phosphoric acid for polymer electrolyte membrane fuel cells.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Chen whose telephone number is (571) 272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bc  
8/29/07

A handwritten signature in black ink, appearing to read 'B. Chen', with a stylized flourish at the end.

**BRET CHEN**  
**PRIMARY EXAMINER**